



Municipal  
Conservation

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BMP Program

System Audits,  
Metering, &  
Leak Detection

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# *Arizona Water Company's Leak Detection Program*



Tom Harrell  
Arizona Water Company



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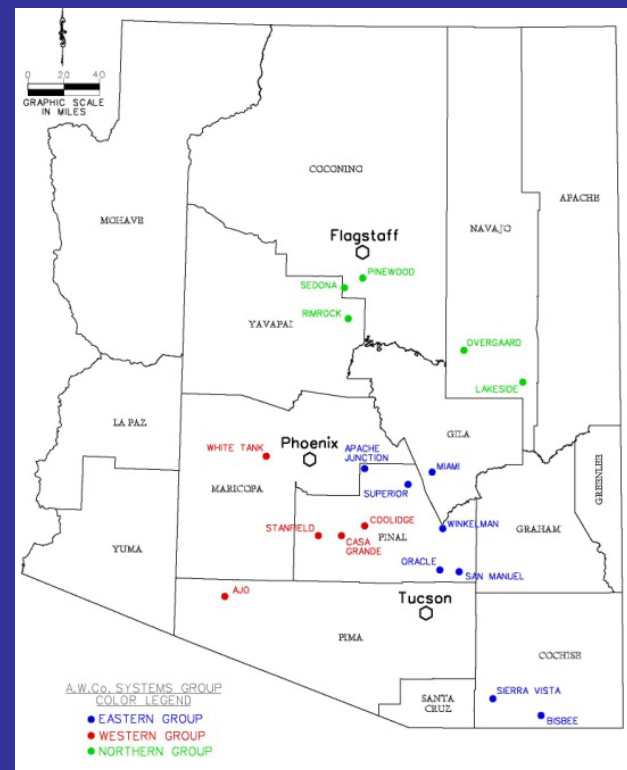
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# ARIZONA WATER COMPANY STATISTICS:



OVER 83,000 SERVICE  
CONNECTIONS

21 COMMUNITIES



LOST & UNACCOUNTED FOR WATER  
LESS THAN 8%



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# MOST LEAKS DO SURFACE







# MOST LEAKS DO SURFACE

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# LEAK DETECTION EQUIPMENT



## LC-2500 LEAK NOISE CORRELATOR

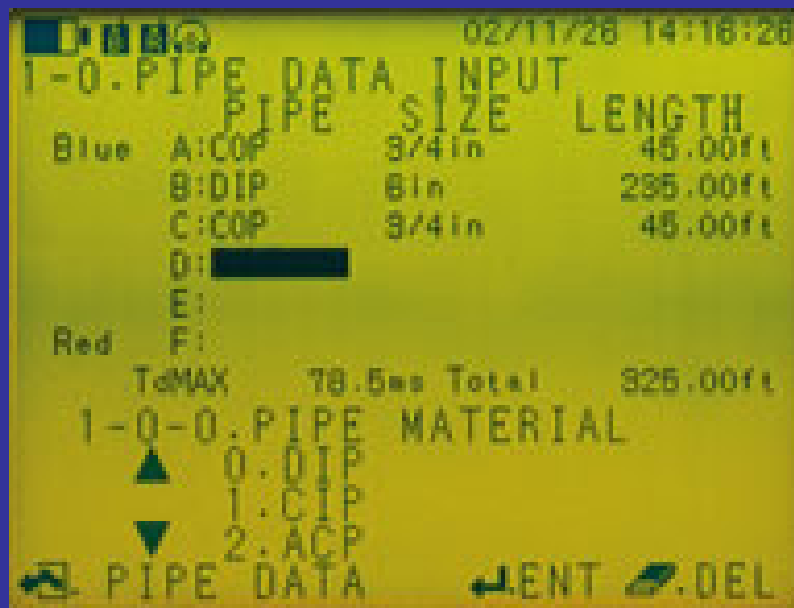


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INPUT PIPE  
DATA  
INFORMATION



RESULTS OF  
CORRELATION





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# LEAK DETECTION EQUIPMENT



## ZCORR DIGITAL CORRELATING LOGGERS



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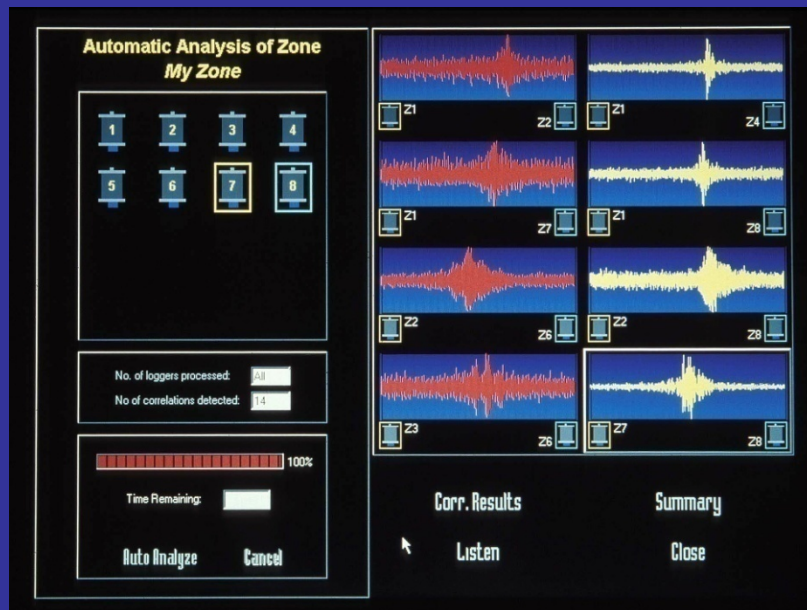


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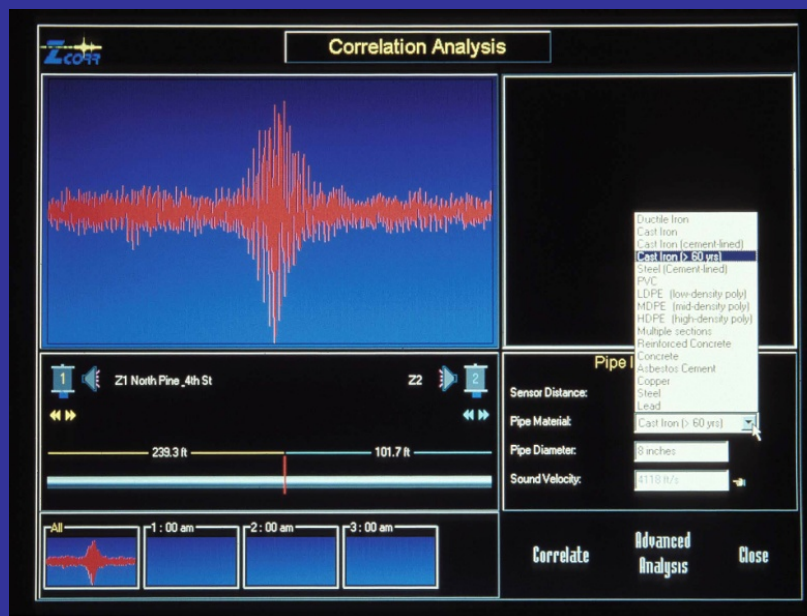
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RESULTS FROM  
LOGGERS



INPUT PIPE  
INFORMATION  
TO PINPOINT  
LEAK





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# LEAK DETECTION EQUIPMENT



## GEOPHONES



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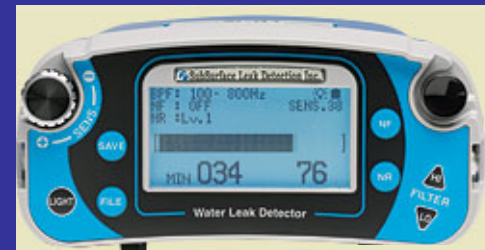
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# ADDITIONAL LEAK DETECTION EQUIPMENT/MEASURES



PERMALOG



UPDATED/  
IMPROVED  
SENSAPHONES



LEAK SURVEY  
COMPANY





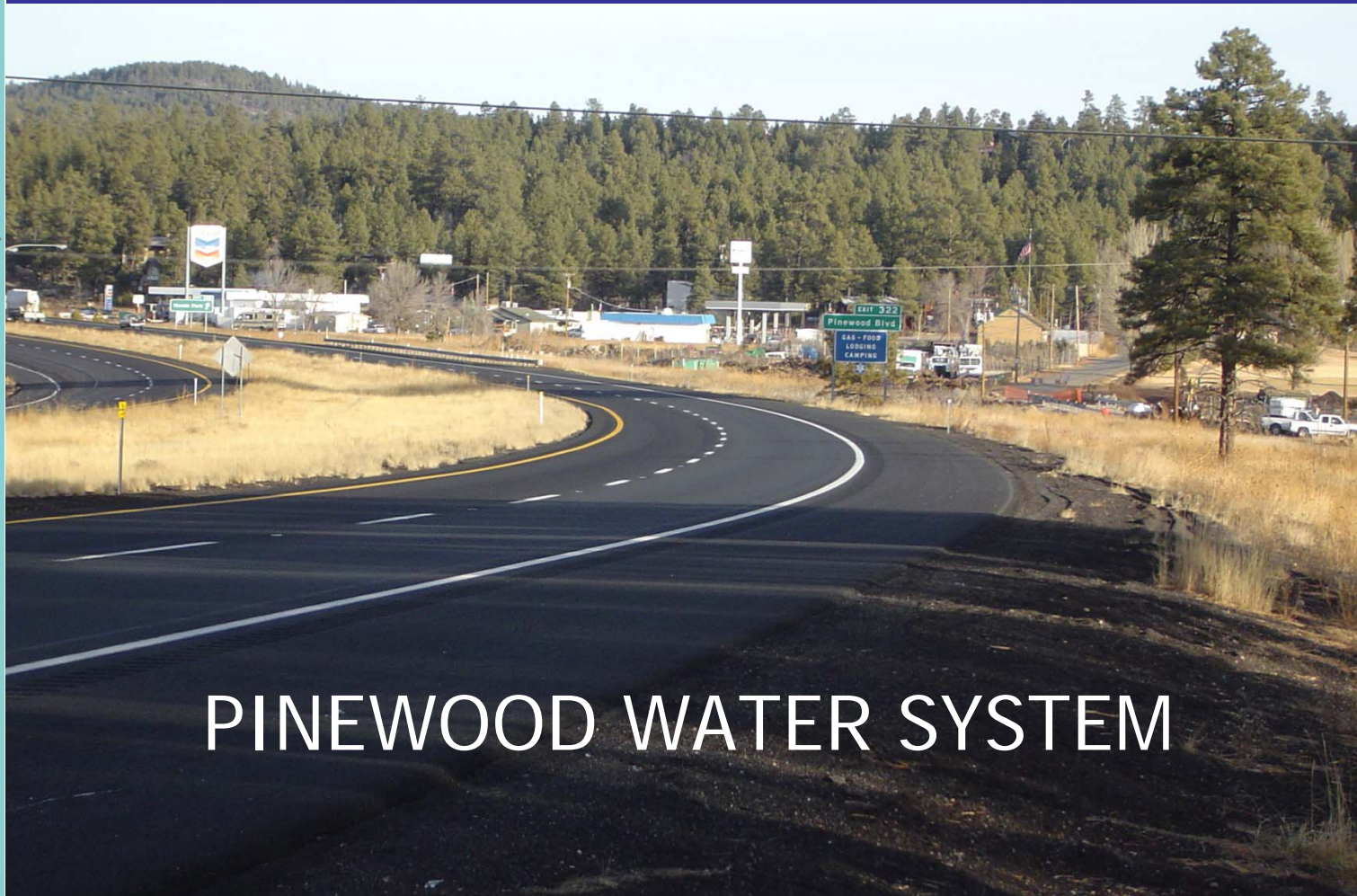
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# SYSTEMATIC EVALUATION OF A WATER SYSTEM



## PINEWOOD WATER SYSTEM





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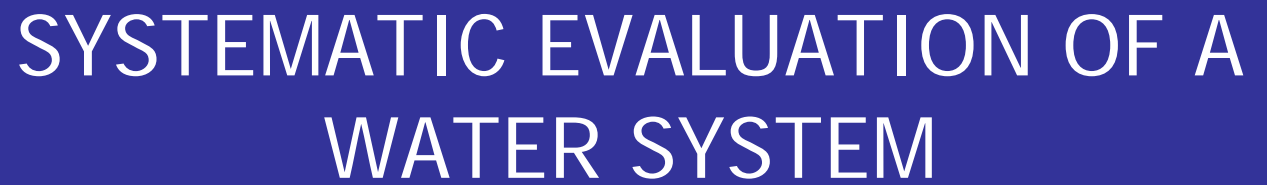
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# SYSTEMATIC EVALUATION OF A WATER SYSTEM

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## WHERE TO START:

- ✓ AREA(S) OF KNOWN/PRIOR LEAKS
- ✓ OLDER PARTS OF THE SYSTEM
- ✓ AREA(S) WITH TERRAIN NOT CONDUCTIVE TO SURFACING LEAKS



## WHAT TO USE:

## ✓ SYSTEM MAPS

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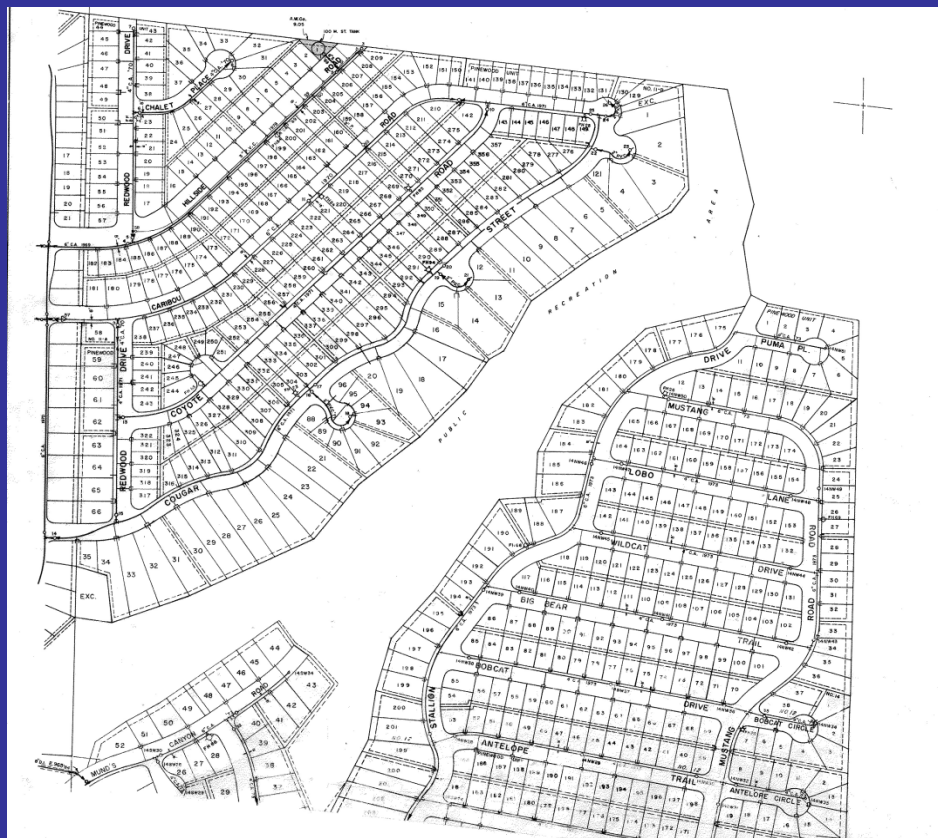
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# SYSTEMATIC EVALUATION OF A WATER SYSTEM

## WHAT TO USE:

✓ ¼-SECTION MAPS







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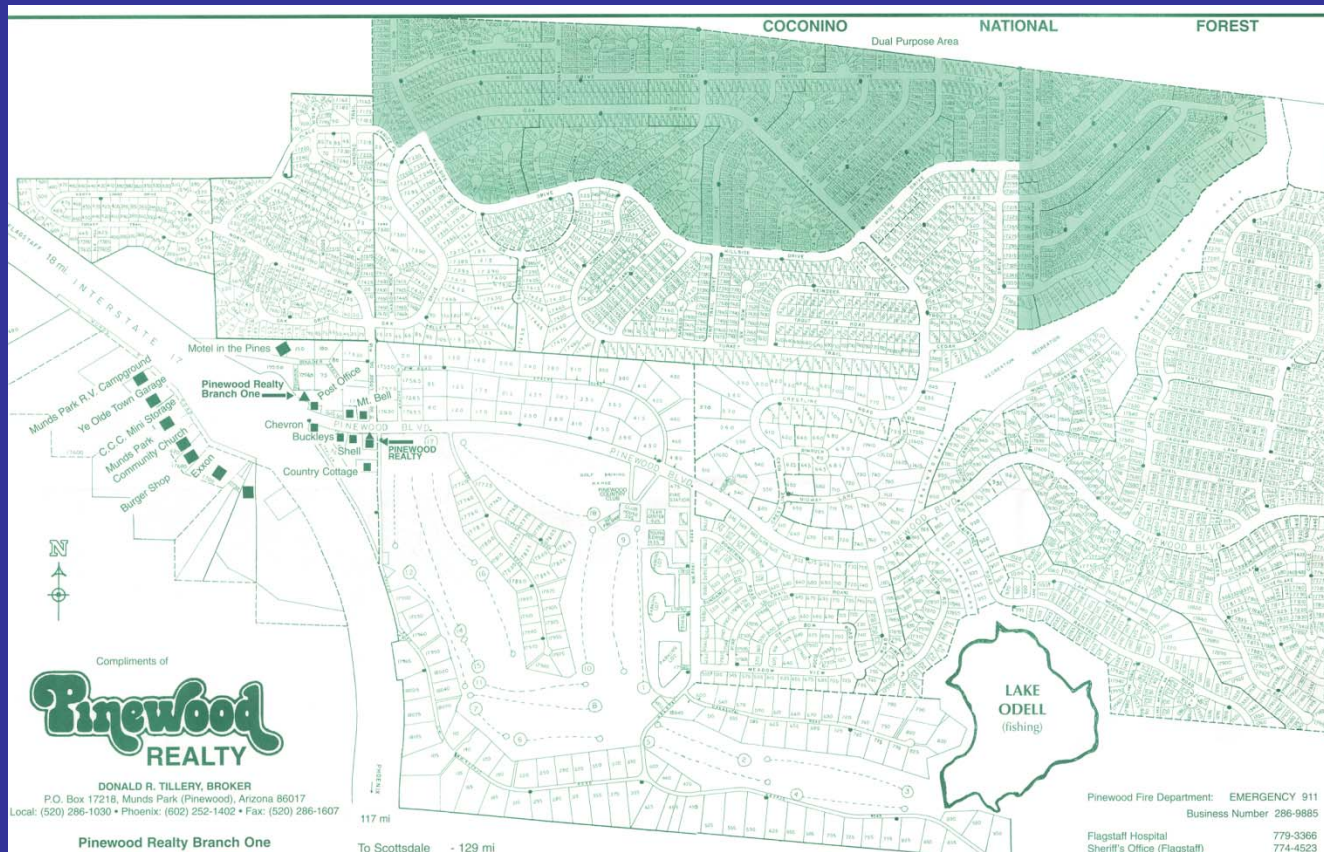
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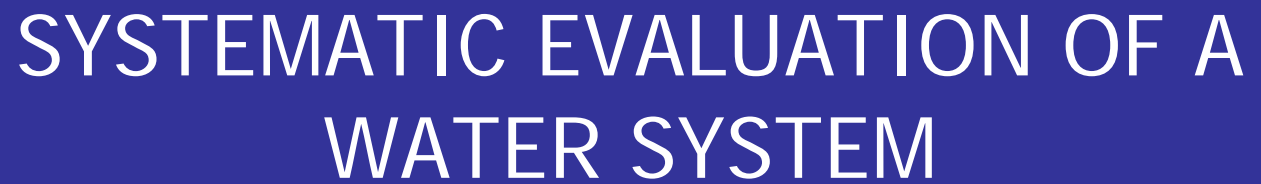
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# SYSTEMATIC EVALUATION OF A WATER SYSTEM

## WHAT TO USE:

✓ OTHER MAPS



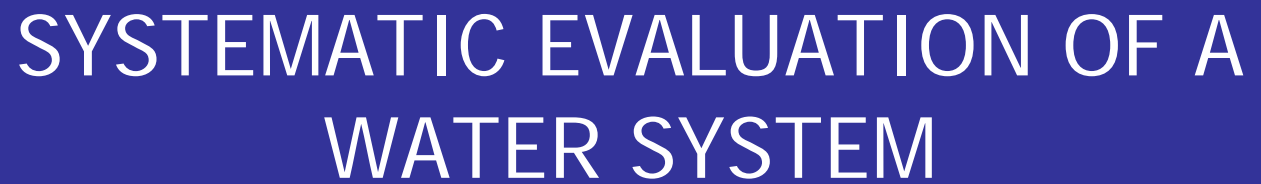


## HOW TO USE THE MAPS:

## ✓ GRID THE SYSTEM

# System Audits, Metering, & Leak Detection

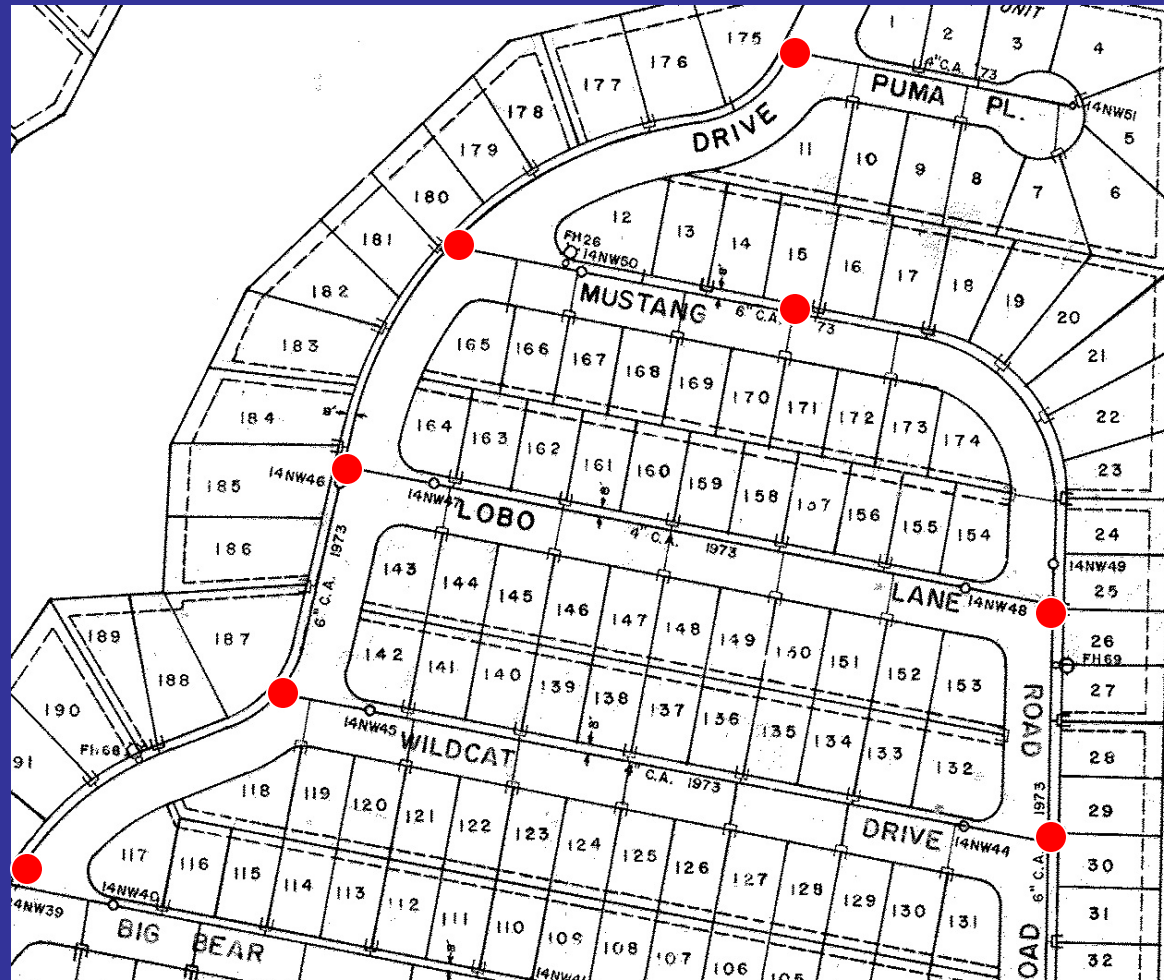
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# UTILIZATION OF THE ZCORR LOGGERS

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# SYSTEMATIC EVALUATION OF A WATER SYSTEM

## DOWNLOAD DATA FROM LOGGERS







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# SYSTEMATIC EVALUATION OF A WATER SYSTEM

## CONFIRMATION/PINPOINT WITH THE CORRELATOR







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# SYSTEMATIC EVALUATION OF A WATER SYSTEM

## REPAIR THE LEAK







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# SYSTEMATIC EVALUATION OF A WATER SYSTEM

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## RESULTS:

- ✓ OVER 50 LEAKS DISCOVERED  
DURING AN 8 WEEK PERIOD
- ✓ 3 LEAKS  $>10$  GPM
- ✓ LOST & UNACCOUNTED FOR  
WATER REDUCED BELOW 10%

Employees Utilizing  
Leak Detection  
Equipment:



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# *Arizona Water Company's Leak Detection Program*



Tom Harrell  
Arizona Water Company





## Municipal Conservation

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## Tom Harrell, Water Resources Coordinator, Arizona Water Company.

Tom Harrell is a 1995 graduate of Arizona State University with a B.S. from the School of Agribusiness and Environmental Resources. He worked 4 years for the Arizona Corporation Commission, handling customer complaints and meter testing.

Since 2001, he has worked for Arizona Water Company. His current title is Water Resources Coordinator. Some of his duties include overseeing the Company's conservation and leak detection programs, reporting water usage information to the Department of Water Resources and the Groundwater Replenishment District, and managing the Company's vehicles and equipment fleet.